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MONTANA WATER SUPPLY OUTLOOK

Snowpack and Streamflow Forecasts as of January 1, 1982

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THE MONTANA WATER SUPPLY OUTLOOK IS A PUBLICATION OF THE U.S. SOIL CONSERVATION SERVICE. THE SCS ADMINISTERS THE COOPERATIVE SNOW SURVEY PROGRAM IN COOPERATION WITH OTHER FEDERAL, STATE, AND PRIVATE AGENCIES, ORGNAIZATIONS, AND INDIVIDUALS.

THE REPORT IS PREPARED BY SCS, SNOW SURVEY AND WATER SUPPLY FORECAST UNIT, P. O. BOX 98, BOZEMAN, MONTANA.

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FEDERAL STATE PRIVATE
COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro electric power generation, navigation, mining and industry

"The Conservation of Water begins with the Snow Survey"

SNOWFALL pH - WINTER 1980-1981

In conjunction with regular snow surveys, employees from the SCS and cooperating agencies took 436 individual pH readings in Montana last winter.

Analysis indicates snowfall in southwestern Montana has lower pH than in other areas. Lowest pH levels, between 4.0 and 5.0, were consistently observed in the Big Hole and Bitterroot River headwaters and in portions of the Upper and Lower Clark Fork, Beaverhead and Madison River drainages. Other watersheds to the north and east had pH levels that were generally in the 5.0 to 6.0 range.

A pH of 5.6 is considered "normal" for precipitation. Values less than 5.0 are generally considered "acid precipitation." A pH of 4.0 is ten times more acidic than a pH of 5.0.

Measurements will be continued this winter. Data from both years will be analyzed to determine any relationships between storm tracks and pH levels, which may help determine possible source areas.

A printed report entitled "Montana Snowfall pH Study, Winter 1980-81", is available from SCS Snow Survey Unit, P. O. Box 98, Bozeman, MT 59715-0092.

STATEWIDE OUTLOOK

STREAMFLOW FORECASTS

Most drainages are forecast to have near average or a little below average runoff for the April through September 1982 period, assuming precipitation for the next six months is near normal. Forecasts for smaller streams will be issued next month after snowfall patterns become more definite.

MOUNTAIN SNOWPACK

Much of the state has near average mountain snowpack. Generally, the southwestern areas have better snow cover than northern and eastern drainages.

The snowpack is above average along the Continental Divide from Yellowstone National Park to Lost Trail Pass and in the Bitterroot Range. The southern areas of Yellowstone Park are much above average. There are some areas that show below average snowpack. These are in the smaller mountain ranges in central Montana and most of the Kootenai, Flathead, Lower Clark Fork, and Blackfoot River drainages.

By January 1, about 40 percent of the season's snowpack is accumulated on the mountain watersheds. With much of the snowfall season remaining, it may be another month or two before this season's snowfall pattern can be accurately determined. For this time of year, conditions appear to be more favorable than for the past two seasons.

WEATHER OUTLOOK FOR JANUARY 1982

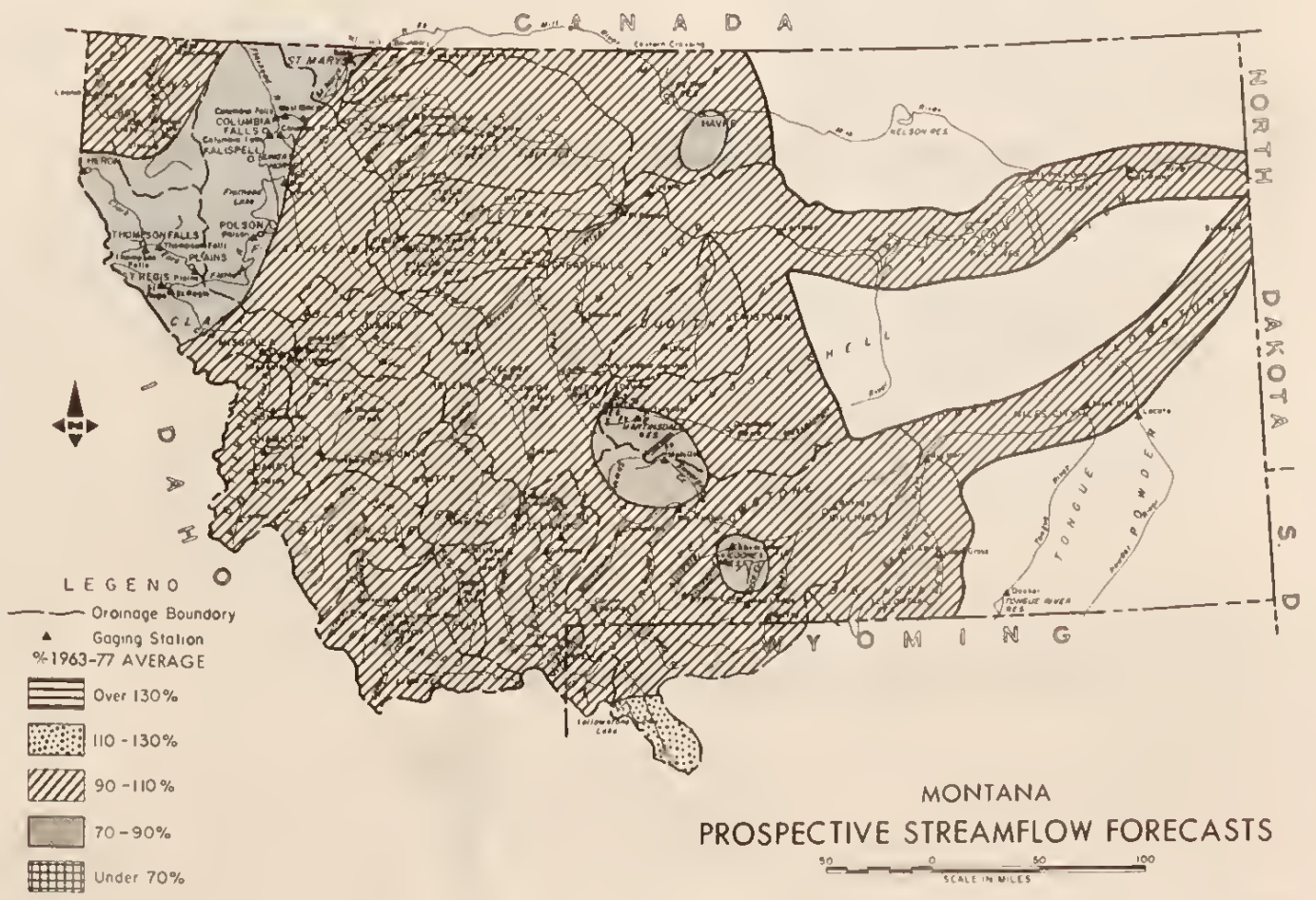
The National Weather Service is expecting temperatures to be near normal over most of the state. A small area in southwest Montana is projected to have above average temperatures.

Precipitation over the western half of Montana is shown in the above average range while the eastern half is in the below average area.

MAP OF SNOW SURVEY SITES

A map of Montana Snow Survey Sites is included in this Water Supply Outlook Report. Please keep this copy because future issues this season will not include a map.

A few extra copies are available from the Snow Survey office. Maps showing only SNOTEL sites are also available. If needed, additional copies may be requested.



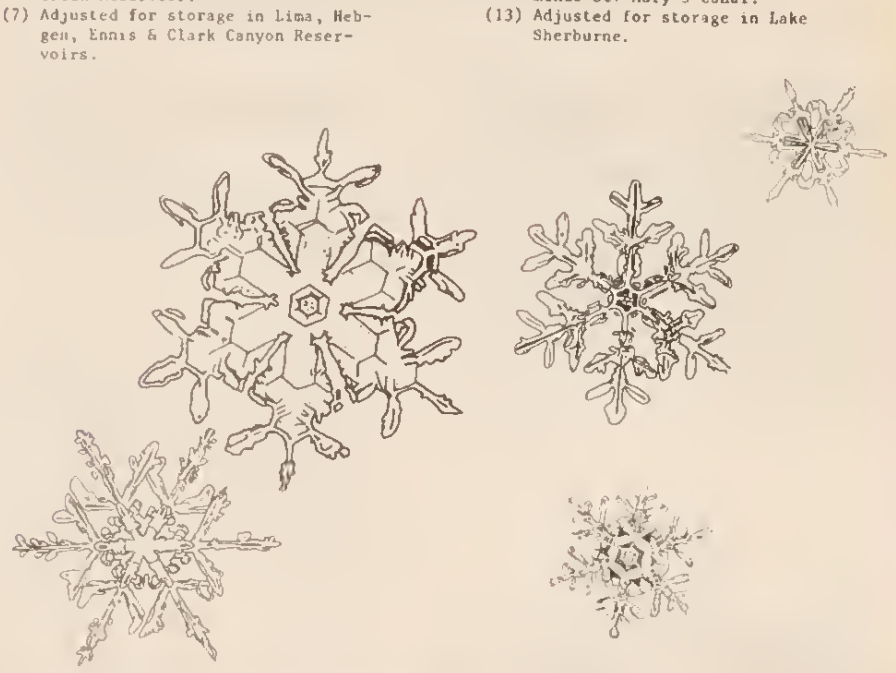
Missouri River & Hudson Bay Drainages

STREAMFLOW FORECASTS

BASIN STREAM and of FORECAST POINT	PERIOD	THIS YEAR FORECAST (THOUSAND ACRE FEET)		PAST RECORD (THOUSAND ACRE FEET)	
		Thousand Acre Feet	Percent of Average	Last Year	Average
		APRIL - SEPTEMBER			
BIG HOLE RIVER near Melrose		730	92		792
MADISON RIVER near McAllister (4)		800	90	716	892
GALLATIN RIVER near Gateway		516	90		572
MISSOURI RIVER at Toston (7)		2450	92	2817	2,671
SUN RIVER at Gibson Dam (8)		525	91	498	580
MISSOURI RIVER at Fort Benton (9)		3819	92		4,148
MARIAS RIVER near Shelby		530	92	432	577
MISSOURI RIVER at Virgelle (11)		4313	90		4,793
MISSOURI RIVER near Landusky (11)		4742	91		5,214
MISSOURI RIVER below Fort Peck Dam (11)		4436	90		4,929
INFLOW LAKE SAKAKAWEA, ND (11)		12105	90		13,450
		APRIL - JULY			
BIG HOLE RIVER near Melrose		680	93		730
MADISON RIVER near McAllister (4)		645	91	602	706
GALLATIN RIVER near Gateway		440	90		488
MISSOURI RIVER at Toston (7)		2145	92	2619	2,330
SUN RIVER at Gibson Dam (8)		480	91	457	529
MISSOURI RIVER at Fort Benton (9)		3350	92		3,640
MARIAS RIVER near Shelby		490	92	408	532
MISSOURI RIVER at Virgelle (11)		3800	90		4,238
MISSOURI RIVER near Landusky (11)		4160	91		4,586
MISSOURI RIVER below Fort Peck Dam (11)		3900	90		4,381
INFLOW LAKE SAKAKAWEA, ND (11)		11000	90		12,239

(1) Adjusted for storage in Lima Reservoir.
(2) Adjusted for storage in Lima and Clark Canyon Reservoirs.
(3) Adjusted for storage in Hebgen Lake.
(4) Adjusted for storage in Hebgen Lake and Ennis Lake.
(5) Sum of West Fork Hyalite Creek and East Fork Hyalite Creek above the Reservoir.
(6) Adjusted for storage in Middle Creek Reservoir.
(7) Adjusted for storage in Lima, Hebgen, Ennis & Clark Canyon Reservoirs.
(8) Adjusted for storage in Gibson Reservoir & diversions.
(9) Adjusted for storage in Lima, Clark Canyon, Hebgen, Ennis, Gibson, Pishkun, Willow Creek & Canyon Ferry Reservoirs.
(10) Adjusted for storage in Two Medicine Reservoir & diversions in Two Medicine Canal.
(11) Adjusted for all upstream reservoirs.
(12) Flow at Eastern Crossing minus St. Mary's Canal.
(13) Adjusted for storage in Lake Sherburne.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE



SUMMARY of SNOW MEASUREMENTS
(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF Last Year	Average +
Beaverhead	9	139	109
Ruby	3	179	124
Big Hole	6	140	93
Boulder	9	114	85
Jefferson	27	137	100
Madison	18	147	105
Gallatin	14	178	92
Missouri Headwater	59	150	100
West-side Missouri (Toston-Cascade)	8	108	86
Smith	5	110	84
Belt-Arrow	3	127	75
Missouri Main-stem	16	112	83
Teton & Sun	4	146	85
Marias	3	100	76
Marias-Teton-Sun	7	116	79
Judith	5	110	84
Musselshell	5	110	84
Judith-Musselshell	10	110	84
Milk	7	174	61
Bear Paws	6	785	45
Missouri (Total)	92	136	93
Saskatchewan			
St. Mary's	2	72	75
Bow River in Alberta	--	---	---

MOUNTAIN SNOWPACK

Water content of the snowpack is above average in the Bighole, Beaverhead and Madison River headwaters. It is below average along the Continental Divide in the headwaters of the Dearborn, Sun, Teton, Marias, and St. Marys River and in small mountain ranges in central Montana. Most of the Missouri River headwaters area has a near average snowpack. Soil moisture under the snowpack is near normal in the southwestern headwaters and near to below normal in other areas.

STREAMFLOW FORECASTS

Most streams are expected to produce near average to a little below average runoff during the spring and summer months, assuming precipitation averages near normal for the next six months. Some of the smaller streams in the Bighole and Beaverhead River headwaters could have streamflow above average. Streams draining the smaller mountain ranges in central Montana could have below average streamflows if present precipitation patterns continue. Streamflow forecasts for all stations will be issued after the February 1, 1982 snow survey data is obtained.

Yellowstone River Drainage

STREAMFLOW FORECASTS

BASIN STREAM and of FORECAST POINT	PERIOD	THIS YEAR FORECAST (THOUSAND ACRE FEET)		PAST RECORD (THOUSAND ACRE FEET)	
		Thousand Acre Feet	Percent of Average	Last Year	Average
		APRIL - SEPTEMBER			
YELLOWSTONE RIVER at Corwin Springs		2030	97	1703	2,102
YELLOWSTONE RIVER near Livingston		2350	95		2,471
CLARKS FORK RIVER near Belfry		580	90		644
YELLOWSTONE RIVER at Billings		4200	90	3998	4,682
BIGHORN RIVER near St. Xavier (3)		1841	91	1331	2,034
YELLOWSTONE RIVER at Miles City (4)		6425	90		7,142
YELLOWSTONE RIVER near Sidney (5)		7000	90		7,806
		APRIL - JULY			
YELLOWSTONE RIVER at Corwin Springs		1700	97	1466	1,749
YELLOWSTONE RIVER near Livingston		1950	95		2,048
CLARKS FORK RIVER near Belfry		508	90		564
YELLOWSTONE RIVER at Billings		3565	90	3628	3,979
BIGHORN RIVER near St. Xavier (3)		1690	91	1328	1,861
YELLOWSTONE RIVER at Miles City (4)		5600	90		6,243
YELLOWSTONE RIVER near Sidney (5)		6100	90		6,805

(1) Adjusted for storage in Mystic Lake
(2) Adjusted for storage in Cooney Reservoir.
(3) Adjusted for storage in Buffalo Bill, Boysen, Bull Lake, Pilot Butte and Bighorn Reservoirs.
(4) Adjusted for storage in Bull Lake, Buffalo Bill, Boysen, Pilot Butte, Bighorn and Tongue River Reservoirs.
(5) Adjusted for reservoirs shown in (4) and diversions into the Lower Yellowstone Canal.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

SUMMARY of SNOW MEASUREMENTS
(COMPARISON WITH PREVIOUS YEARS)

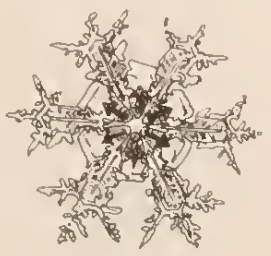
RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF Last Year	Average +
Upper Yellowstone ab Livingston	13	166	100
Shields	4	244	84
Boulder & Stillwater	--	---	---
Rock Creek & Clark's Fork	9	133	80
Yellowstone (ab Bighorn River)	26	161	90
Bighorn/Wyoming	--	---	---
Little Bighorn	--	---	---
Bighorn (Total)	--	---	---
Tongue	--	---	---
Powder	--	---	---
Yellowstone (Total)	26	161	90

MOUNTAIN SNOWPACK

The current snowpack is quite variable, ranging from below average in the area between Rock Creek and the Crazy Mountains to well above average in the Yellowstone River headwaters above Yellowstone Lake. Most of the main water-producing areas of the Yellowstone River have average to above average amounts of water stored in the snow. The soil moisture is generally near to a little below average in most drainages.

STREAMFLOW FORECASTS

Yellowstone Lake inflow is expected to be above average during the spring and summer months. The flows decrease downstream to a little below average where the Yellowstone leaves Montana. Unless there is some improvement in snow conditions in the next few months, below average runoff is expected in some of the smaller drainages. Forecasts for smaller tributaries will be issued after February 1, 1982 snow surveys are completed.



AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

GOVERNMENT AGENCIES
- Canada
  - Department of the Environment
    - Atmospheric Environment Service
    - Water Management Service
  - British Columbia Ministry of Environment
    - Inventory and Engineering Branch, Hydrology Section
  - Alberta Environment
    - Technical Services Division
- Federal
  - Department of the Army - Corps of Engineers
  - Department of Agriculture - Forest Service
  - Soil Conservation Service
  - Department of Commerce - National Environmental Satellite Service
  - National Weather Service
  - Department of Interior - Bureau of Indian Affairs
  - Fish and Wildlife Service
  - Geological Survey
  - National Park Service
  - Bureau of Reclamation
  - Department of Energy - Bonneville Power Administration

STATE AGENCIES
- Montana Conservation Districts
- Montana Department of Fish, Wildlife and Parks
- Montana Department of Natural Resources and Conservation
- Montana State University - Agricultural Experiment Station
- University of Montana - School of Forestry

PRIVATE ORGANIZATIONS
- The Anaconda Company
- Big Sky of Montana
- Butte Water Company
- Flathead Valley Community College
- Montana Power Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged

SNOW SURVEY DATA

SNOW JANUARY 1982

DRAINAGE BASIN and or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	THIS YEAR Snow Depth (inches)	THIS YEAR Water Content (inches)	PAST RECORD Water Content (inches) Last Year	PAST RECORD Water Content (inches) Average
ARCH FALLS	7350	K/23	23	4.6	1.9	5.9
ASHLEY DIVIDE	4820	K/29	20	3.5	-	-
ASHLEY LAKE	4000	K/29	15	2.6	-	-
BADGER PASS	6900	K/31	52	15.0A	15.5	21.2
BADGER PASS PILLOW	6900	1/01	SP	11.0	11.1	-
BANFIELD MOUNTAIN	5600	1/06	40	9.8	9.8	11.6
BANFIELD MOUNTAIN PILLOW	5600	1/01	SP	8.4	8.7	9.7
BARKER LAKES	8250	K/31	27	6.3	-	-
BARKER LAKES PILLOW	8250	1/01	SP	6.7	7.5	-
BASIN CREEK	7180	K/28	23	5.6	4.8	-
BASIN CREEK PILLOW	7180	1/01	SP	3.8	-	-
BEAGLE SPRINGS PILLOW	8850	1/01	SP	4.3	1.9	-
BEAR MOUNTAIN PILLOW (ID)	5400	1/01	SP	26.7	-	-
BEAR PAW SKI AREA	5200	K/30	5	1.0	0.0	2.6
BIG SPRINGS (ID)	6500	K/31	43	9.4	6.7	7.8
BLACK BEAR	7950	K/28	70	21.8	13.2	17.3
BLACK BEAR PILLOW	7950	K/28	SP	18.7	13.4	16.4
BLACK PINE	7100	K/30	22	4.6	3.0	5.2
BLACK PINE PILLOW	7100	K/30	SP	6.7	4.7	6.4
BLOODY DICK	7600	K/30	34	8.6	-	-
BLOODY DICK PILLOW	7600	K/30	SP	7.0	5.1	-
BLUE LAKE	5900	K/31	34	8.5A	8.0	10.8
BOULDER MOUNTAIN PILLOW	7950	1/01	SP	10.3	-	-
BOX CANYON PILLOW	6670	1/01	SP	3.3	1.6	-
BOXELDER CREEK	5100	K/30	8	1.2	0.0	3.8
BRIDGER BOWL	7250	K/29	46	10.6	4.4	13.1
BRIDGER BOWL PILLOW	7250	K/29	SP	10.8	5.8	12.3
BULL MOUNTAIN	6600	K/31	12	2.2	0.0	2.6
CALVERT CREEK	6450	K/31	27	5.3	-	-
CALVERT CREEK PILLOW	6450	K/31	SP	4.8	2.3	6.0
CAMP CREEK (ID)	6580	K/31	19	3.0	3.0	4.8
CANYON (WY)	7940	1/01	EST	9.0	3.2	6.5
CANYON PILLOW (WY)	7940	1/01	SP	8.7	-	-
CARROT BASIN	9000	K/28	59	17.2	10.6	16.6
CARROT BASIN PILLOW	9000	K/28	SP	13.7	9.8	12.2
CASHE CREEK	7800	K/21	16	3.2	-	-
CASHE CREEK PILLOW	7800	1/01	SP	4.1	1.6	-
CHESSMAN RESERVOIR	6200	K/30	7	1.2	0.0	1.4
CLOVER MEADOW PILLOW	8600	1/01	SP	8.6	5.3	-
COLE CREEK	7850	K/28	23	5.0	6.[illegible]	8.6
COLE CREEK PILLOW	7850	1/01	SP	4.9	5.3	8.5
COMBINATION	5600	K/31	9	2.0	0.0	2.5
COMBINATION PILLOW	5600	K/31	SP	2.2	0.6	2.8
COPPER BOTTOM PILLOW	5200	1/01	SP	5.5	4.1	7.4
COPPER CAMP PILLOW	6950	1/01	SP	14.0	12.2	19.6
COYOTE HILL	4200	K/31	20	4.0	2.6	4.0
CRYSTAL LAKE PILLOW	6100	1/01	SP	5.9	4.5	-
DAISY PEAK	7600	K/30	24	4.6	4.3	-
DALY CREEK	5780	K/30	26	5.3	3.9	5.2
DALY CREEK PILLOW	5780	1/01	SP	5.4	5.0	-
DARKHORSE LAKE PILLOW	8600	1/01	SP	15.0	9.5	-
DEADMAN CREEK	6450	K/30	22	4.2	2.7	5.6
DEADMAN CREEK PILLOW	6450	K/30	SP	4.0	2.7	5.2
DEVILS SLIDE	8100	K/28	40	10.1	5.6	10.5

SNOW JANUARY 1982

DRAINAGE BASIN and or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	THIS YEAR Snow Depth (inches)	THIS YEAR Water Content (inches)	PAST RECORD Water Content (inches) Last Year	PAST RECORD Water Content (inches) Average
MARIAS PASS	5250	1/02	25	6.0	5.9	6.6
MAYNARD CREEK	6210	K/29	26	5.3	.2	6.4
MAYNARD CREEK PILLOW	6210	K/29	SP	4.6	2.4	5.3
MONUMENT PEAK PILLOW	8900	1/01	SP	11.0	7.2	-
MOOSE CREEK PILLOW (ID)	6200	1/01	SP	9.5	-	-
MOSQUITO RIDGE PILLOW (ID)	5200	K/12	SP	12.5	-	-
MOULTON RESERVOIR	6850	K/30	18	2.0	.0	-
MOUNT LOCKHART	6400	K/31	32	8.0	6.4	9.7
MOUNT LOCKHART PILLOW	6400	K/31	SP	8.4	6.7	9.6
NEVADA CREEK PILLOW	6480	1/01	SP	4.6	4.2	-
NEWTON MOUNTAIN	5600	K/29	49	12.4	16.2	-
NEZ PERCE CAMP PILLOW	5650	1/01	SP	5.0	4.4	-
NOISY BASIN PILLOW	6040	1/01	SP	14.0	14.4	17.7
NORRIS BASIN (WY)	7500	1/02	29	6.1	3.3	5.0
NORTH FK. ELK CREEK	6250	1/02	24	5.4	1.8	5.1
NORTH FK. ELK CREEK PILLOW	6250	1/01	SP	5.4	2.6	5.3
NORTH FORK JOCKO	6330	1/06	66	17.3	13.8	-
NORTHEAST ENTRANCE	7400	K/30	17	3.4	1.8	3.7
NORTHEAST ENTRANCE PILLOW	7400	K/30	SP	3.3	2.7	4.3
OLD FAITHFUL (WY)	7400	1/01	38	6.3	2.3	-
OPHIR PARK	7150	1/01	29	6.6	6.4	8.8
PETERSON MEADOWS	7200	K/28	21	4.0	5.2	4.9
PETERSON MEADOWS PILLOW	7200	K/28	SP	4.2	5.4	5.1
PICKFOOT CREEK PILLOW	6650	1/01	SP	6.0	2.1	-
PIKE CREEK	5930	K/28	35	8.8	-	-
PIKE CREEK PILLOW	5930	1/01	SP	9.2	9.5	-
PIPESTONE PASS	7200	K/31	10	1.8	.0	2.4
PLACER BASIN PILLOW	8830	1/01	SP	6.5	5.2	-
POORMAN CREEK PILLOW	5100	1/01	SP	10.8	7.8	12.9
PORCUPINE PILLOW	6500	1/01	SP	2.5	1.3	-
RED TOP	5260	K/29	40	9.6	12.4	-
ROCKER PEAK	8000	K/29	29	6.2	6.8	7.9
ROCKER PEAK PILLOW	8000	K/29	SP	7.3	7.0	7.3
ROCKY BOY	4700	K/30	4	1.0	.0	1.7
ROCKY BOY PILLOW	4700	K/30	SP	.7	0.7	1.8
SADDLE MOUNTAIN PILLOW	7940	K/28	SP	12.6	11.1	12.3
SAVAGE PASS (ID)	6170	K/31	46	11.6	9.6	10.2
SHOWER FALLS	8100	K/28	43	11.1	6.1	11.9
SHOWER FALLS PILLOW	8100	1/01	SP	11.1	7.3	11.8
SILVER RUN	6630	K/28	2	.3	-	-
SILVER RUN PILLOW	6630	K/28	SP	.7	0.0	-
SKALKAHO SUMMIT	7260	K/30	56	12.6	9.6	-
SKALKAHO SUMMIT PILLOW	7260	1/01	SP	13.5	9.4	-
SPOTTED BEAR MOUNTAIN	7000	1/06	27	5.3A	3.3	6.9
SPUR PARK	8100	K/30	38	9.6	8.7	9.8
SPUR PARK PILLOW	8100	K/30	SP	9.3	10.0	10.7
STAHL PEAK	6050	1/06	56	15.4	18.2	23.4
STAHL PEAK PILLOW	6050	1/01	SP	13.0	16.1	18.2
STORM LAKE	7780	K/28	24	4.6	5.[illegible]	5.6
STUART MOUNTAIN	7400	1/06	61	15.5	11.4	13.4
SUCKER CREEK	3960	K/30	4	.6	.0	0.3
SYLVAN PASS (WY)	7100	K/28	32	8.0	3.4	5.9
TARGHEE PASS (ID)	7000	K/30	29	6.0	3.7	6.2
TAYLOR ROAD	4080	K/30	5	1.0	.0	1.9
TEN MILE LOWER	6600	K/31	14	2.2	1.7	2.8
TEN MILE MIDDLE	6800	K/31	24	4.6	5.0	4.6
TEN MILE UPPER	8000	K/29	28	5.6	7.0	5.6

SNOW JANUARY 1982

DRAINAGE BASIN and or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	THIS YEAR Snow Depth (inches)	THIS YEAR Water Content (inches)	PAST RECORD Water Content (inches) Last Year	PAST RECORD Water Content (inches) Average
DISCOVERY BASIN	7050	K/30	24	4.0	4.2	6.0
DIVIDE PILLOW	7900	1/01	SP	6.0	2.8	4.6
DIX HILL	6400	1/01	20	4.2	1.6	5.1
EAST ENTRANCE (WY)	6960	K/28	28	5.7	2.8	4.4
EMERY CREEK PILLOW	4350	1/01	SP	6.1	6.6	-
FISH CREEK	8000	K/28	27	5.8	3.6	-
FISHER CREEK	9100	1/01	EST	16.0	-	17.7
FISHER CREEK PILLOW	9100	1/01	SP	15.0	13.9	16.4
FLATTOP MOUNTAIN PILLOW	6300	1/01	SP	15.6	23.7	22.2
FLEECER RIDGE	7500	K/31	24	5.7	3.4	5.1
FOURTH OF JULY	3450	K/29	18	2.7	2.3	-
FRIDAY HILL	4620	K/29	32	6.4	8.3	-
FROHNER MEADOWS	6480	K/30	17	2.6	0.2	4.1
FROHNER MEADOWS PILLOW	6480	K/30	SP	3.2	2.6	4.3
GARVER CREEK	4250	1/06	27	5.0	5.5	5.9
GARVER CREEK PILLOW	4250	1/01	SP	4.9	5.3	5.0
GRAVE CREEK	4300	1/06	29	6.4	5.7	9.0
GRAVE CREEK PILLOW	4300	1/06	SP	7.4	6.6	8.8
GRIZZLY PEAK	8640	K/29	22	4.8	4.7	8.2
HAND CREEK	5030	K/29	26	5.3	2.8	-
HAND CREEK PILLOW	5030	1/01	SP	4.3	4.0	-
HAWKINS LAKE	6450	1/06	43	12.2	14.3	14.6
HAWKINS LAKE PILLOW	6450	1/01	SP	10.6	-	14.1
HEBGEN DAM	6550	K/28	24	4.6	4.1	5.0
HELL ROARING DIVIDE	5770	K/30	43	9.2	11.0	14.5
HOLBROOK	4530	K/31	20	4.0A	1.0	4.2
HOOD MEADOW	6600	K/28	20	4.4	1.1	5.5
HOODOO BASIN PILLOW	6000	1/01	SP	17.5	14.3	20.6
ISLAND PARK (ID)	6290	K/31	40	7.5	6.1	6.2
ISLAND PARK PILLOW (ID)	6290	1/01	SP	8.1	-	-
JOHNSON PARK	6450	K/30	14	2.2	1.4	-
KINGS HILL	7500	K/30	26	5.6	5.4	7.5
KRAFT CREEK PILLOW	4750	1/01	SP	5.0	2.3	-
LAKE CAMP (WY)	7780	1/01	27	4.8	2.4	3.6
LAKE CREEK	6100	K/30	18	3.0	-	4.4
LAKEVIEW CANYON	6930	K/30	17	3.0	5.2	5.4
LAKEVIEW RIDGE	7400	K/30	17	3.4	3.7	5.0
LAKEVIEW RIDGE PILLOW	7400	1/01	SP	4.2	5.4	-
LEMHI RIDGE PILLOW	8100	1/01	SP	5.9	3.2	4.9
LICK CREEK	6860	K/28	21	4.7	2.1	4.3
LICK CREEK PILLOW	6860	K/28	SP	4.6	3.3	4.4
LOLO PASS (ID)	5230	K/30	49	12.0	6.7	11.5
LOOKOUT (ID)	5250	K/30	48	12.2	8.0	13.7
LOOKOUT PILLOW (ID)	5250	1/01	SP	11.1	-	-
LOWER TWIN PILLOW	7900	1/01	SP	10.8	9.2	-
LUBRECHT FLUME	4800	K/29	16	3.0	.0	2.4
LUBRECHT FLUME PILLOW	4800	1/01	SP	2.5	0.7	2.2
LUBRECHT FOREST # 3	5450	K/26	13	2.0	.6	2.9
LUBRECHT FOREST # 4	4650	K/29	9	1.3	.0	1.5
LUBRECHT FOREST # 6	4040	K/28	10	1.6	.0	1.5
LUBRECHT HYDROPLOT	4200	K/29	16	2.6	.4	2.8
LUPINE CREEK (WY)	7380	K/31	20	3.3	2.0	4.8
MADISON PLATEAU	7750	K/28	37	9.0	7.4	9.6
MADISON PLATEAU PILLOW	7750	K/28	SP	10.2	8.4	10.1
MANY GLACIER	4960	K/29	22	5.9	8.2	-
MANY GLACIER PILLOW	4960	1/01	SP	5.4	9.8	-

SNOW JANUARY 1982

DRAINAGE BASIN and or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	THIS YEAR Snow Depth (inches)	THIS YEAR Water Content (inches)	PAST RECORD Water Content (inches) Last Year	PAST RECORD Water Content (inches) Average
TEPEE CREEK	8000	K/30	35	8.8	4.2	6.6
TEPEE CREEK PILLOW	8000	K/30	SP	6.9	5.1	6.3
THUMB DIVIDE (WY)	7980	K/30	47	9.4	6.0	8.6
THUNDER CREEK (BC)	6595	K/30	15	2.9	6.8	5.5
TOGWOTEE PASS (WY)	9580	K/80	1.6	-	10.7	13.4
TRINKUS LAKE	6100	1/06	74	18.3	13.0	-
TRUMAN CREEK	4060	K/29	10	1.5	-	-
TV MOUNTAIN	6800	1/06	34	7.2	5.1	7.4
TWELVEMILE CREEK	5600	K/29	48	10.7	4.6	8.4
TWELVEMILE CREEK PILLOW	5600	1/01	SP	8.9	2.2	7.4
TWENTY-ONE MILE	7150	K/30	27	5.7	5.9	7.8
TWIN CREEKS	3580	K/31	29	5.5A	1.0	5.2
TWIN LAKES PILLOW	6510	1/01	SP	20.7	11.7	17.9
UPPER HOLLAND LAKE	6200	1/06	52	13.0	11.0	-
WALDRON	5600	K/31	16	3.0	.0	3.7
WALDRON PILLOW	5600	K/31	SP	3.4	2.5	4.8
WARM SPRINGS	7800	K/29	42	9.0	7.7	-
WARM SPRINGS PILLOW	7800	K/29	SP	10.4	8.7	-
WEASEL DIVIDE	5450	1/06	49	12.9	16.1	-
WEST YELLOWSTONE	6700	K/30	25	3.5	2.4	5.1
WEST YELLOWSTONE PILLOW	6700	K/30	SP	3.6	2.6	4.1
WHISKEY CREEK	6800	K/22	30	8.0	5.5	8.6
WHISKEY CREEK PILLOW	6800	K/22	SP	6.3	5.5	7.7
WHITE ELEPHANT (ID)	7700	K/30	48	13.1	8.0	8.9
WHITE MILL	8700	1/01	EST	12.5	5.2	13.8
WHITE MILL PILLOW	8700	1/01	SP	11.5	8.0	12.1
WILLOW CREEK	6500	K/28	14	3.2	.0	3.9
WOOD CREEK PILLOW	5960	1/01	SP	3.7	1.9	-

Average based on 1963-77 period. A - Aerial observation; water content estimated, SP - Snow Pillow observation; water content only. *Estimated from SNOTEL.

Note: K in date column represents the month of December

LATE ARRIVING DATA

Above Burke (ID)	4100	K31	28	5.2	3.0	9.3
Gibbons Pass	7100	K28	52	11.2	10.5	9.1
Kilgore (ID)	6330	102	27	6.1	4.0	4.5
Moose Creek (ID)	6200	104	49	10.6	7.4	6.9
Saddle Mountain	7940	K28	53	12.4	11.8	11.1
Sawtell Mountain (ID)	8720	K30	67	20.2	11.8	14.1
Skylark Trail Pillow	6200	101	SP	11.7	7.0	-
Sunset Pillow (ID)	5540	101	SP	12.0	-	-
Valley View (ID)	6680	K31	27	6.1	4.5	6.4
Togwotee Pass	9580	K30	80	21.6	10.7	13.4

SNOW SURVEY DATA SHEETS

Many cooperators are interested in filing the snow survey data for future reference. To simplify filing, the snow survey data sheet is designed and printed to be clipped out and punched for filing in a 3-ring binder.

Columbia River Drainage

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
PERIOD	APRIL - SEPTEMBER				APRIL - JULY				APRIL - JUNE			
KOOTENAI RIVER below Libby Dam (1)	6890	95	6726	7,246	5870	95	5516	6,178				
KOOTENAI RIVER at Leonia (1)	8490	96	7941	8,883	7390	96	6601	7,727	5900	96	4573	6,150
BLACKFOOT RIVER near Bonner	917	90		1,017	830	90		920	715	90		794
CLARK FORK RIVER above Milltown (6)	749	89		843	660	90		730	545	89		613
CLARK FORK RIVER above Missoula	1666	90	1530	1,859	1490	90	1359	1,651	1260	90	1148	1,408
BITTERROOT RIVER near Darby	570	95	445	602	523	95	401	552	454	95	339	480
BITTERROOT RIVER at Missoula (9)	1470	95		1,543	1350	95		1,416	1150	95		1,211
CLARK FORK RIVER below Missoula	3136	92		3,405	2840	93		3,069	2410	92		2,618
CLARK FORK RIVER at St. Regis	4090	90	3586	4,521	3690	90	3240	4,078	3160	90	2797	3,492
NORTH FORK FLATHEAD RIVER near Columbia Falls	1710	87		1,969	1550	87		1,782	1300	87		1,498
MIDDLE FORK FLATHEAD RIVER near West Glacier	1680	88	1504	1,911	1540	88	1385	1,750	1290		1134	1,470
SOUTH FORK FLATHEAD RIVER near Columbia Falls (10)	2070	90	1815	2,302	1940	90	1714	2,159	1700	90	1475	1,884
FLATHEAD RIVER at Columbia Falls (10)	5610	89	5061	6,330	5160	89	4664	5,827	4420	89	3860	4,964
FLATHEAD RIVER near Polson (11)	6600	89	6097	7,394	6080	89	5622	6,806	5140	89	4600	5,779
CLARK FORK RIVER near Plains (11)	11000	89	10071	12,340	10000	89	9190	11,222	8460	89	7570	9,507
CLARK FORK RIVER at Whitehorse Rapids (12)	12000	87		13,781	10900	87		12,519	9250	87		10,633

(1) Adjusted for storage in Lake Koocanusa.
(2) Adjusted for storage in Silver Lake, diversions to and pumping from Georgetown Lake.
(3) Adjusted for storage in Georgetown Lake, diversions from and pumping to Silver Lake.
(4) Sum Flint Creek at Maxville and Boulder Creek at Maxville.
(5) Sum of North Fork Lower Willow Creek near Hall and South Fork Lower Willow Creek near Hall.
(6) Difference in observed flow Clark Fork above Missoula and Blackfoot near Bonner.
(7) Adjusted for storage in Painted Rocks Reservoir.
(8) Adjusted for diversion into Sunset Highline Canal.
(9) Difference in observed flow Clark Fork above and below Missoula.
(10) Adjusted for storage in Hungry Horse Reservoir.
(11) Adjusted for storage in Hungry Horse Reservoir and Flatbead Lake.
(12) Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Noxon Rapids Reservoir.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

SUMMARY of SNOW MEASUREMENTS
(COMPARISON WITH PREVIOUS YEARS)

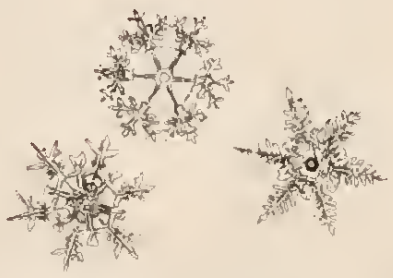
RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF Last Year	Average †
East Kootenay/BC.	8	61	77
Kootenai/Montana	10	94	78
Kootenai above Bonners Ferry...	18	78	77
Little Bitterroot	--	---	---
N. Fk. Flathead..	6	82	69
M. Fk. Flathead..	4	84	74
S. Fk. Flathead..	4	146	85
Swan	2	105	82
Flathead	13	86	73
Stillwater & Whitefish.....	1	83	63
Clark Fork above Blackfoot	23	128	87
Blackfoot	15	163	90
Upper Clark Fork above Missoula .	38	142	88
Bitterroot	7	164	112
Lower Clark Fork below Missoula .	6	141	94
Clark Fork (Total w/o Flathead)...	51	146	94
Pend O'Reille (Clark Fork & Flatbead)	64	121	87
Columbia (Pend O'Reille & Kootenai)	69	115	88

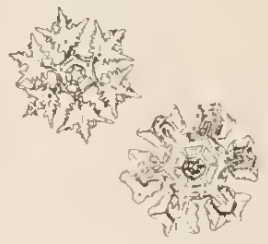
MOUNTAIN SNOWPACK

Except for the southwestern part of the Bitterroot River drainage, all drainages have near a below average snowpack. Recent storms in this area have delayed some of the helicopter snow survey measurements, and present conditions are probably a little better than indicated by measurements made the last week in December 1981. Over half of the snow accumulation season remains, and conditions may change depending on future storm patterns. Mountain soils beneath the snow are a little drier than normal in most headwater areas.

STREAMFLOW FORECASTS

Streamflows during next spring and summer are expected to be near to a little below average in southern drainages and in the Kootenai River drainage. The Flathead and Lower Clark Fork Rivers are forecast to have runoff that is 10 to 13 percent below average. Forecasts for major drainages will be updated and smaller tributary runoff will be forecast after February 1, 1982 snow surveys have been completed.



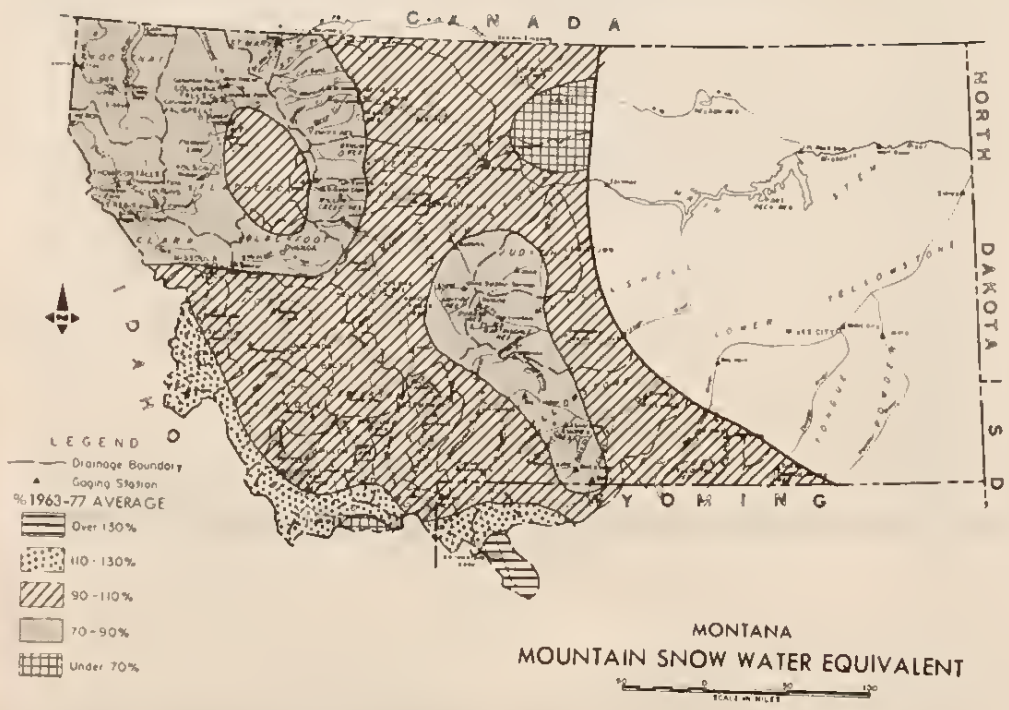


SATELLITE SNOW COVER

MISSOURI RIVER BASIN
Above
Canyon Ferry Dam

DATE	PERCENT SNOW COVER	AVERAGE SNOWLINE ELEVATION IN FEET
November 8, 1981	9.5	8535
November 19, 1981	53	6530
November 26, 1981	100	3800
November 29, 1981	100	3800
December 7, 1981	71	5770
December 17, 1981	100	3800
Oecember 20, 1981	91	4680
December 29, 1981	95	4380

OATA PROVIOED BY NOAA/NESS



RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH

Basin or Stream	RESERVOIR	Usable Capacity	Usable Storage This Year	Usable Storage Last Year	Usable Storage Average
	COLUMBIA				
Kootenai	Koocanusa	5,748.2	3,655	3,704	---
Flathead	Hungry Horse	3,451.0	2,603	2,833	2,624
	Flathead Lake	1,791.0	1,171	1,408	1,428
	Camas (4)	45.2	20.0	22.8	19.4
	Mission Valley (8)	100.3	19.6	26.2	34.4
Clark Fork	Georgetown Lake	31.0	29.8	30.0	28.2
	Lower Willow Creek	4.9	.9	1.6	1.4
	Nevada Creek	12.6	4.5	5.8	4.3
	Noxon Rapids	334.6	322.8	308.2	318.7
Bitterroot	Painted Rocks	31.7	---	---	18.3
	Como	34.9	---	---	9.0
	MISSOURI				
Beaverhead	Lima	84.0	25.0	44.3	38.8
	Clark Canyon	257.2	155.6	161.1	132.7
Ruby	Ruby	38.8	22.4	---	20.4
Madison	Hebgen Lake	377.5	275.3	274.7	241.5
	Ennis Lake	41.0	30.4	30.0	35.6
Gallatin	Middle Creek	8.0	3.7	3.5	2.9
Missouri	Canyon Ferry	2,043.0	1,747	1,817	1,753
	Hauser & Helena	61.9	63.0	63	61.2
	Lake Helena	10.4	10.9	10.9	10.2
	Holter Lake	81.9	78.1	81.0	76.2
	Fort Peck Lake	18,910.0	14,590	15,380	15,820
Smith	Smith River	10.6	5.7	5.3	6.4
	Newlan Creek	12.4	---	9.7	---
Musselshell	Bair	7.0	2.4	4.5	4.2
	Martinsdale	23.1	10.4	10.5	10.0
	Deadman's Basin	72.2	---	---	44.7
Sun	Gibson	99.1	39.3	47.6	38.6
	Willow Creek	32.2	22.4	18.9	20.6
	Pishkun	32.0	19.8	19.6	16.7
Marias	Lower Two Medicine	11.9	---	---	6.1
	Four Horns	19.2	---	---	13.2
	Swift	30.0	5.8	16.2	12.9
	Lake Frances	111.9	78.2	78.6	70.9
Milk	Elwell (Tiber)	1,347.0	514.7	541.2	545.6
	Beaver Creek	3.5	0.7	1.3	1.4
	Fresno	127.2	34.5	36.8	68.2
	Nelson	66.8	58.9	23.7	45.0
	HUDSON BAY				
St. Mary's	Lake Sherburne	64.3	12.6	30.3	17.0
	YELLOWSTONE				
Stillwater	Mystic Lake	21.0	8.7	8.6	13.1
Clark's Fork	Cooney	27.4	0.0	12.2	14.2
Tongue	Tongue River	68.0	22.2	10.2	30.4
Bighorn	Bighorn Lake	1,356.0	941.5	949.5	580.3

U.S. GOVERNMENT PRINTING OFFICE
1982 593-052

SNOW COURSES AND RELATED DATA MEASURING SITES

MONTANA

1981

20 0 20 40 60 80 MILES

SCALE 1:2,000,000

LEGEND

- Snow Data Measuring Site
- Watershed Boundary
- Sub-watershed Boundary

Source:
Base map prepared by SCS, WTSC Carto Unit from USGS 1:1,000,000 Nat. Atlas.
Thematic detail compiled by state staff.
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

M7-0-22024

INDEX TO MONTANA SNOW COURSES AND DATA SITES

Snow Course	Elev.	Sec.	Twp.	Range	Sensors in Addition to Snow Course[1]	Drainage Basin
Abundance Lake	8800	7	3S	11W		Big Hole
Ambrose	6480	28	9N	18W		Bitterroot
Arch Falls	7350	3	5S	6E		Gallatin
Ashley Divide	4820	10	28N	23W	P	Flathead
Ashley Lake	4000	8	28N	23W	P	Flathead
*Badger Pass	6900	4	27N	11W	A,P,S,1	Teton-Marias-Sun
Bald Eagle Peak	5700	6	27N	31W		Kootenai
Bald Ridge	7500	11	4N	10E		Upper Yellowstone
Banfield Mountain	5600	4	32N	30W	S,P,1,W	Kootenai
Baree Creek	5500	36	26N	31W		Kootenai
Baree Midway	4600	31	26N	30W		Kootenai
Baree Trail	3800	5	25N	30W		Kootenai
*Barker Lakes	8250	17	4N	12W	S,P,T	Clark Fork
*Basin Creek	7180	31	1N	7W	S,P,1	Clark Fork
Bassoo Peak	5150	11	24N	25W		Flathead
*Beagle Springs	8850	6	16S	11W	S,P,1	Beaverhead
Bear Basin	8150	9	6S	3E		Gallatin
Bear Paw Ski Area	5200	21	28N	16E	P	Milk
Beaver Lake	5900	31	28N	11W		Flathead
Berry Meadow	7000	8	5N	5W		Jefferson
Big Coulee	5100	10	19N	9E		Missouri Main Stem
Big Creek	6750	7	22N	18W		Flathead
Big Sky	7700	30	6S	3E	P	Gallatin
Big Sky Meadow	6350	35	6S	3E		Gallatin
Big Snowy	7150	25	12N	17E		Judith
*Black Bear	7950	27	15S	5E	S,P,1	Madison
Black Mountain	7750	34	7N	8W		Clark Fork
*Black Pine	7100	26	8N	15W	S,P,1	Clark Fork
*Bloody Dick	7600	12	8S	16W	S,P,1	Beaverhead
Blue Lake	5900	25	28N	11W	A	Teton-Marias-Sun
Bots Sots	7750	35	7S	19E		Upper Yellowstone
*Boulder Mountain	7950	1	9N	3E	S,P,T	Missouri Main Stem
*Box Canyon	6700	28	6S	12E	S,P,1	Upper Yellowstone
Boxelder Creek	5100	24	28N	16E	P	Milk
Branham Lakes	8850	5	4S	3W		Ruby
Bridger Bowl	7250	25	1N	6E	S,P	Gallatin
Bristow Creek	3900	2	32N	30W		Kootenai
Brush Creek Timber	5000	12	30N	26W		Kootenai
Bull Mountain	6600	18	2N	9W		Big Hole
Cabin Creek	5200	34	23N	10W		Teton-Marias-Sun
Call Road	8050	21	8S	2W		Madison
*Calvert Creek	6430	34	2N	14W	S,P,1	Big Hole
Camp Misery	6400	30	28N	18W		Flathead
Camp Senia	7890	2	6S	18E		Upper Yellowstone
Carrot Basin	9000	18	10S	4E	S,P	Gallatin
Carter Creek	7400	22	8S	7W		Beaverhead
*Cashe Creek	7800	8	9S	3E	S,P,T	Gallatin
Cedar Grove	3760	35	28N	31W		Kootenai
Chessman Reservoir	6200	2	8N	5W		Missouri Main Stem
Chicken Creek	4060	14	33N	23W		Flathead
Christensen Ranch	6000	34	7S	7W	P,NSC	Beaverhead
*Clover Meadow	8600	28	9S	2W	S,P,1	Ruby
*Cole Creek	7850	26	7S	19E	S,P,1	Upper Yellowstone
Colley Creek	6300	34	6S	10E	P	Upper Yellowstone
*Combination	5600	7	8N	14W	S,P,T	Clark Fork
Cooke Station	8150	19	9S	15E		Upper Yellowstone
*Copper Bottom	5200	15	15N	8W	S,P,T	Clark Fork
*Copper Camp	6950	3	15N	9W	S,P,T	Clark Fork
Copper Creek	5700	1	15N	9W		Clark Fork
Copper take Creek	6100	3	15N	9W		Clark Fork
Copper Mountain	7700	13	3N	7W		Jefferson
Cottonwood Creek	6400	14	7N	8W		Clark Fork
Coyote Hill	4200	12	18N	16W		Clark Fork
Crevice Mountain	8400	22	9S	9E		Upper Yellowstone
*Crystal take	6100	19	12N	18E	S,P,T	Judith
Dad Creek take	8400	24	12S	13W		Beaverhead
Daisy Peak	7600	34	11N	11E	P	Musselshell
*Daly Creek	5780	16	5N	18W	S,P,T	Bitterroot
*Darkhorse Lake	8600	4	8S	16W	S,P,1	Big Hole
Davis Creek	5400	20	37N	33W		Kootenai
*Deadman Creek	6450	23	12N	8E	S,P,1	Missouri Main Stem
Desert Mountain	5600	30	31N	18W		Flathead
Devil's Slide	8100	14	5S	6E		Gallatin
Discovery Basin	7050	21	6N	13W		Clark Fork
*Divide	7800	14	12S	4W	S,P,1	Ruby
Dix Hill	6400	24	11N	8W	P	Clark Fork
Eagle Creek	7000	2	5N	10L		Musselshell
East Boulder S	9250	14	7S	12E	A	Gallatin
East Fork R S	5400	16	2N	17W		Bitterroot
El Dorado Mine	7800	23	8N	12W		Clark Fork
Elk Horn Springs	7800	21	4S	12W		Beaverhead
Elk Peak	8000	10	8N	8E		Missouri Main Stem
*Emery Creek	4350	20	31N	18W	S,P,1	Flathead
Fatty Creek	5500	8	22N	18W		Flathead
Fish Creek	8000	5	1S	7W		Jefferson
*Fisher Creek	9100	11	9S	14E	S,P,T	Upper Yellowstone
Five-Bull	5700	25	20N	10W		Teton-Marias-Sun
*Flattop Mountain	6300	12	35N	18W	S,P,1	Flathead
Fleecer Ridge	7500	3	1N	10W		Big Hole
Foothen	8280	11	1S	13W		Big Hole
Forest Lake	6400	26	6N	10E		Musselshell
Four Mile	6900	5	4S	2W	P	Madison
Fourth of July	3450	19	34N	33W		Kootenai
Fred Burr Pass	8000	12	6N	13W		Clark Fork
Freight Creek	6000	13	26N	10W		Teton-Marias-Sun
Friday Hill	4620	19	34N	33W		Kootenai
*Frohner Meadows	6480	23	8N	5W	S,P,T	Missouri Main Stem
Garver Creek	4250	18	37N	32W	S,P,1,W	Kootenai
Gibbons Pass	7100	3	2S	19W		Bitterroot
Goat Mountain	7000	20	22N	10W		Teton-Marias-Sun
Gold Creek Lake	7200	14	8N	12W		Clark Fork
Gold Stone	8100	11	8S	16W		Beaverhead
Grasshopper	7000	19	9N	8E		Missouri Main Stem
*Grave Creek	4300	1	36N	25W	S,P,1	Kootenai
Griffin Creek Divide	5150	11	28N	25W		Flathead
Grizzly Peak	8400	26	7S	19E		Upper Yellowstone
Gunsight Lake	6300	30	26N	13W		Flathead
*Hand Creek	5035	6	29N	25W	S,P,1	Flathead
Hawkins Lake	6450	18	37N	33W	S,P,1,W	Kootenai
Haymaker	8050	16	11N	12E		Musselshell
Heart Lake Trail	4800	11	14N	27W		Clark Fork
Hebgen Dam	6550	22	11S	3E		Madison
Hell Roaring Divide	5770	35	32N	22W		Flathead
Herrig Junction	4850	19	34N	23W	P	Flathead
Highwood Divide	5650	16	19N	9E	P	Missouri Main Stem
Highwood Station	4600	20	20N	9E	P	Missouri Main Stem
Hotbrook	4530	18	21N	13W	A	Flathead
Hood Meadow	6600	22	4S	6E		Gallatin
*Hoodoo Basin	6000	17	14N	27W	S,P,1	Clark Fork
Hoodoo Creek	5900	16	14N	27W		Clark Fork
Iceberg take #3	5600	1	35N	17W		St Mary
Independence	7850	21	7S	12E		Upper Yellowstone
Intergaard	6450	6	5N	13W		Clark Fork
Jack Creek	6650	1	6S	1E		Madison
Jahnke Lake Trail	7200	24	7S	16W		Big Hole
Johnson Park	6450	16	10N	11E	P	Musselshell
Josephine Lower #9	4900	22	35N	16W		St Mary
Keeler Creek	3300	25	30N	35W		Kootenai
King's Hill	7500	34	13N	8E		Missouri Main Stem
Kishenehn	3890	14	37N	22W		Flathead
Kiwanis Camp	3720	9	29N	16E	P,T,W	Milk
*Kraft Creek	4750	4	19N	17W	S,P,T	Flathead
Lake Creek	6100	27	11S	1E		Madison
Lakeview Canyon	6930	26	14S	2W		Beaverhead
*Lakeview Ridge	7400	27	14S	2W	S,P,1	Beaverhead
Lemhi Pass	7480	9	10S	15W		Beaverhead
*Lemhi Ridge	8100	4	10S	15W	S,P,T	Beaverhead
*Lick Creek	6860	10	4S	6E	S,P,1	Gallatin
Little Park	7400	22	6S	3E		Gallatin
Logan Creek	4300	34	30N	24W		Flathead
Lone Mountain	8880	25	6S	2E		Gallatin
Lost Horse	5940	5	4N	23W		Bitterroot
tost Soul	4800	31	33N	29W		Kootenai
*Lower Twin	7900	12	4S	3W	S,P,1	Madison
tower Willow Creek	4740	3	9N	14W	P,NSC	Clark Fork
*Lubrecht Flume	4680	13	13N	14W	S,P,T	Clark Fork
Lubrecht Forest #3	5450	19	13N	14W		Clark Fork
Lubrecht Forest #4	4650	23	13N	15W		Clark Fork
tubrecht Forest #6	4040	11	13N	15W		Clark Fork
Lubrecht Hydropiot	4200	22	13N	14W		Clark Fork
Madison Plateau	7750	28	14S	5E	S,P	Madison
*Many Glacier	4960	10	35N	17W	S,P,1	St Mary
Marias Pass	5250	31	30N	13W		Teton-Marias-Sun
Maynard Creek	6210	19	1N	7E	S,P	Gallatin
Middle Mill Creek	7850	17	4S	3W		Ruby
Mill Creek	7500	31	6S	11E	P	Upper Yellowstone
Mineral Creek	4000	34	35N	17W		Flathead
*Monument Peak	8800	16	7S	12E	S,P,1	Upper Yellowstone
Moulton Reservoir	6850	17	4N	7W		Clark Fork
Mount Allen #7	5700	27	35N	16W		St Mary
*Mount Lockhart	6400	18	25N	9W	S,P,T	Teton-Marias-Sun
Mudd Lake	7650	24	2N	15W		Big Hole
*Mule Creek	8300	9	5S	11W	S,P,T	Big Hole
*Nevada Creek	6480	6	12N	7W	S,P,T	Clark Fork
New World	6700	24	3S	6E		Gallatin
Newton Mountain	5600	23	34N	34W		Kootenai
*Nez Perce Camp	5580	19	1S	23W	S,P,1	Bitterroot
Nez Perce Creek	6500	16	4N	6W		Jefferson
Nez Perce Pass	6570	25	1S	24W		Bitterroot
*Noisy Basin	6040	25	28N	19W	S,P,1	Flathead
*North Fork Elk Creek	6250	20	13N	13W	S,P,T	Clark Fork
North Fork Jocko	6330	3	17N	17W		Flathead
North Meadow	7500	24	3S	3W		Madison
*Northeast Entrance	7400	33	9S	14E	S,P,T	Upper Yellowstone
Notch	8500	18	11S	4W		Ruby
Ophir Park	7150	13	11N	8W		Clark Fork
Palisade Creek	8250	3	2N	15W		Big Hole
Peterson Meadows	7200	2	4N	14W	S,P	Clark Fork
Picket Pin O	9450	36	4S	13E	A	Upper Yellowstone
Picket Pin Lower	6200	1	5S	14E	P	Upper Yellowstone
Picket Pin Middle	7250	3	5S	14E		Upper Yellowstone
Picket Pin Upper	8100	32	4S	14E	P	Upper Yellowstone
*Pickfoot Creek	6650	31	10N	4E	S,P,T	Missouri Main Stem
Picnic Grounds	6500	21	5N	6W		Jefferson
Piegan Pass #6	5500	27	35N	16W		St Mary
*Pike Creek	5930	5	29N	13W	S,P,T	Teton-Marias-Sun
Pipestone Pass	7200	10	1N	7W		Jefferson
*Placer Basin	8830	11	5S	13E	A,S,P,T	Upper Yellowstone
PMC Headquarters	3656	34	6S	23E	P,W,1,NSC	Upper Yellowstone
Poorman Creek	5100	5	27N	31W	S,P,1,W	Kootenai
*Porcupine	6500	10	4N	10E	S,P,1	Upper Yellowstone
Potomageton Park	7150	33	10S	3E		Madison
Ptarmigan #8	5800	36	36N	17W		St Mary
Red Mountain	6000	4	36N	29W		Kootenai
Red Top	5260	14	34N	34W		Kootenai
Rock Creek	5600	7	12N	18E	P	Judith
Rock Creek Meadows	8160	34	7S	5E	P	Gallatin
*Rocker Peak	8000	17	7N	5W	S,P,1	Jefferson
Rocky Boy	4700	22	28N	16E	S,P	Milk
Sacajawea	6550	36	2N	6E		Upper Yellowstone
*Saddle Mountain	7940	5	2S	19W	S,P,1	Bitterroot
Sentinel Creek	8300	17	10S	3E		Madison
*Shower Falls	8100	14	5S	6E	S,P,1	Gallatin
*Silver Run	6630	11	8S	19E	S,P,1	Upper Yellowstone
*Skalkaho Summit	7260	30	6N	17W	S,P,T	Clark Fork
*Skylark Trail	6200	29	19N	17W	S,P,1	Flathead
Slag-A-Melt Lake	8750	29	5S	17W		Big Hole
Slide Rock Mountain	7100	35	10N	16W		Clark Fork
Smuggler Mine	6960	24	4S	4W		Ruby
*South Fork Shields	8100	13	4N	10E	S,P,1	Upper Yellowstone
Spotted Bear Mountain	7000	23	25N	15W	A	Flathead
*Spur Park	8100	20	12N	9E	S,P,T	Judith
*Stahl Peak	6030	5	36N	25W	S,P,1	Kootenai
Star Lake E	9650	31	8S	15E	A	Upper Yellowstone
Stemple Pass	6600	16	13N	7W		Missouri Main Stem
Storm take	7780	19	4N	13W		Clark Fork
Stryker Basin	6180	26	34N	24W	P	Flathead
Stuart Mill	6500	19	5N	13W		Clark Fork
Stuart Mountain	7400	6	14N	18W		Clark Fork
Sucker Creek	3960	11	29N	16E	P	Milk
Sugarloaf	7350	13	7N	8W		Clark Fork
Taylor Peaks	8500	26	9S	2E	S,P	Gallatin
Taylor Road	4080	19	29N	16E	P	Milk
Ten Mile Lower	6600	12	8N	6W		Missouri Main Stem
Ten Mile Middle	6800	13	8N	6W		Missouri Main Stem
Ten Mile Upper	8000	19	8N	5W		Missouri Main Stem
*Tepee Creek	8000	15	12S	1W	S,P,1	Madison
Timberline Creek	8850	10	8S	18E		Upper Yellowstone
Trail Creek	7090	15	10S	15W		Beaverhead
Trinkus Lake	6100	9	25N	17W		Flathead
Truman Creek	4060	10	26N	22W		Flathead
TV Mountain	6800	33	15N	19W		Clark Fork
*Twelvemile Creek	5600	34	5N	23W	S,P,1	Bitterroot
Twenty-One Mile	7150	1	11S	5E		Gallatin
Twin Creeks	3580	25	26N	16W	A	Flathead
*Twin Lakes	6510	32	5N	23W	S,P,T	Bitterroot
Upper Holland take	6200	28	20N	15W		Flathead
*Waldron	5600	17	25N	9W	S,P,1	Teton-Marias-Sun
*Warm Springs	7800	13	6N	13W	S,P,T	Clark Fork
Weasel Divide	5450	20	37N	24W		Kootenai
West Rosebud	7500	9	7S	16E		Upper Yellowstone
West Yellowstone	6700	34	13S	5E	S	Madison
*Whiskey Creek	6800	19	14S	5E	S,P,1	Madison
*White Mill	8700	18	9S	15E	S,P,1	Upper Yellowstone
White Pine Ridge	8850	18	14S	9W		Beaverhead
Willow Creek	6500	31	7S	20E		Upper Yellowstone
*Wood Creek	5960	36	20N	10W	S,P,1	Teton-Marias-Sun
Wrong Creek	5700	32	25N	10W		Teton-Marias-Sun
Wrong Ridge	6800	17	25N	10W		Teton-Marias-Sun
WYOMING						
*Bald Mountain	9380	29	56N	91W	S,P,T	Big Horn
*Beartooth Lake	9275	--	---	---	S,P,1	Upper Yellowstone
*Burgess R S No 2	7880	36	56N	89W	S,P,1	Tongue
*Canyon	7940	--	---	---	S,P,1	Upper Yellowstone
East Entrance	6960	17	52N	109W		Big Horn
*Evening Star	9200	20	54N	107W	S,P,T	Upper Yellowstone
Five Springs Falls	7620	20	56N	92W		Big Horn
Lake Camp	7780	--	---	---		Upper Yellowstone
Lupine Creek	7380	--	---	---		Upper Yellowstone
Norris Basin	7500	--	---	---		Madison
Old Faithful	7400	27	52N	116W		Madison
*Parker's Peak	9400	19	55N	108W	S,P,1	Upper Yellowstone
Steamboat Point	7560	29	56N	87W		Tongue
*Sylvan Lake	8420	--	---	---	S,P,1	Upper Yellowstone
Sylvan Pass	7100	--	---	---		Upper Yellowstone
Thumb Divide	7980	--	---	---		Upper Yellowstone
*Two Ocean Plateau	9160	6	48N	111W	S,P,1	Snake
Wolverine	7650	29	55N	106W		Upper Yellowstone
IDAHO						
*Above Burke	4100	11	48N	5E	S,P,T	Spokane
Bear Mountain	5400	9	57N	3E	S,P,1	Pend O'Reille
Big Springs	6400	4	13N	44E		Snake
Blue Ledge Mine	6700	27	13N	38E		Snake
Camp Creek	6800	21	13N	36E		Snake
*Crab Creek	6200	6	12N	39E	S,P,T	Snake
Halverson Creek	4850	3	57N	3E		Kootenai
Island Park	6290	28	13N	43E		Snake
Kilgore	6200	6	12N	39E		Snake
Kit Carson	5020	4	27N	15E		Clearwater
Lolo Pass	5240	16	38N	15E		Clearwater
*Lookout	5120	4	47N	6E	S,P,1	Spokane
Moose Creek	6200	14	27N	21E		Salmon
Savage Pass	6170	18	36N	15E		Clearwater
Sawtell Mountain	8720	7	14N	43E		Snake
*Sunset	5600	33	49N	5E	A,S,P,T	Spokane
Targhee Pass	7000	32	16N	44E		Snake
Valley View	6740	7	15N	44E		Snake
White Elephant	7700	17	14N	43E		Snake

LEGEND

*SNOTEL site - data transmitted daily by telemetry

[1]Blank refers to snow course only at site

S = Snow pillow also
P = Precipitation gage also
T = Max-min temperature also
W = Wind run also
A = Aerial marker also
NSC = No snow course